REMARKS

The application has been amended to place the application in condition for allowance at the time of the next Official Action.

A substitute Abstract of the Disclosure is provided on an accompanying separate sheet to address the abstract objection noted in the Official Action.

The specification is amended to provide antecedent basis for "a capacity element" and for "an element that measures the inductance" as recited in claims 20 and 21, respectively. Since claim 8, lines 9-15 of the application as filed provided a capacitive group and a group which measures the inductance of the solenoid, one of ordinary skill in the art would understand that the capacitive group includes a capacitive element and that the group which measures the inductance of the solenoid includes an inductive element such that the addition of these phrases to the specification does not present new matter.

Claims 16-28 were previously pending in the application. Claims 29-31 have been added. Therefore, claims 16-31 are presented for consideration.

Claims 16 and 25 are objected to because in claim 16, lines 6-7 "sliding" should be inserted before "ferromagnetic nucleus" for consistency. Claim 16 has been amended accordingly.

Claim 25 is objected to because "the" should be inserted before "entries" to avoid double recitation. This objection is respectfully traversed.

Claim 25 depends from claim 16. Claim 16 does not include "entries". The first time "entries" is used is on line 4 of claim 25. Therefore, it would be improper to insert "the" before "entries" because entries are not previously recited. Reconsideration and withdrawal of the rejection are respectfully requested.

Claim 22 is amended to remove "is capable of" to address the 35 USC §112, second paragraph rejection noted in the Official Action.

Claims 16, 18-19 and 22-28 are rejected as unpatentable over MARKYVECH et al. 6,134,889 in view of MIOTKE et al. 5,152,145. This rejection is respectfully traversed.

Claim 16 includes a solenoid having a sliding ferromagnetic nucleus therein. Claim 16 further provides a sensing system for sensing a position occupied by the sliding ferromagnetic nucleus in the solenoid. The sensing system is outside a boundary defined the solenoid.

The position set forth in the Official Action is that MARKYVECH et al. teach a sliding armature but that MARKYVECH et al. fail to disclose that the armature is a ferromagnetic material. The Official Action offers MIOTKE et al. as teaching an armature of ferromagnetic material. The conclusion set forth

in the Official Action is that it would have been obvious to use the ferromagnetic material of MIOTKE et al. in the actuator of MARKYVECH et al. to improve the accuracy of controlling the actuator in MARKYVECH et al.

However, this conclusion cannot be maintained for at least two reasons. First, the ferromagnetic plate 72 of MIOTKE et al. is accurately controlled using guide plates. The accuracy is not based on the material being ferromagnetic. Second, the ferromagnetic plate 72 of MIOTKE et al. is used as a brake and does not slide within the solenoid.

The stated reason for combining the references is to improve the accuracy of controlling the actuator in the MARKYVECH et al. device. However, as set forth above, guide plates 93a and 93b guide ferromagnetic plate 72 as disclosed on column 3, lines 20-28 of MIOTKE et al., these guide plates or other means prevent rotation of plate 72. There is no teaching or suggestion in MIOTKE et al. that a ferromagnetic material improves the accuracy of controlling an actuator.

In addition, as set forth above, claim 16 provides that the solenoid has a sliding ferromagnetic nucleus therein. MIOTKE et al. teach two embodiments. The first embodiment uses a ferromagnetic material as a plate to which an electromagnet develops a magnetic force of attraction which moves the electromagnet towards the plate. As disclosed on column 3, lines 44-55 of MIOTKE et al., the electromagnet moves towards the plate

to lock the plate in position. This restricts axial motion of the electromagnetic assembly.

In the second embodiment of MIOTKE et al., support links 140a, 140b are moved inwardly to restrict the axial motion and fix the electromagnetic assembly in place. One of ordinary skill in the art would not look to a reference that teaches using a ferromagnetic material to lock the electromagnetic assembly in place. Accordingly, one of ordinary skill in the art would not be motivated to combine MIOTKE et al. with MARKYVECH et al. to render obvious claim 16.

MPEP §2143.01 provides "if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

One of ordinary skill in the art attempting to improve the control of a sliding actuator would not look to the teachings of MIOTKE et al. As set forth above, MIOTKE et al. use a ferromagnetic material to restrict axial motion and lock a shaft in place. Locking the shaft of MARKYVECH et al. would render MARKYVECH et al. unsatisfactory for its intended purpose. Therefore, there is no suggestion or motivation to make the proposed modification.

Moreover, even if there was motivation to combine the references in the manner suggested, the references would not

teach each of the recited elements. As set forth above, claim 16 further provides that the sensing system is outside a boundary defined by the solenoid.

MIOTKE et al. do not teach a sensing system. The sensing system offered in MARKYVECH et al. is elements 154 and 156. As seen in Figure 3 of MARKYVECH et al., these elements are within the boundary defined by solenoid 110.

The above-noted feature is missing from each of the references, is absent from the combination, and thus is not obvious to one having ordinary skill in the art.

Claims 18, 19 and 22-28 depend from claim 16 and further define the invention and are also believed patentable over the proposed combination of references.

Claim 17 is rejected as being unpatentable over MARKYVECH et al. in view MIOTKE et al. and further in view of RIECK et al. 6,700,232 and DETRICK et al. 3,763,412. This rejection is respectfully traversed.

RIECK et al. and DETRICK et al. are only cited for the teaching of sheathed and insulating conducting wire. Neither RIECK et al. nor DETRICK et al. teach that which is recited in claim 16. As set forth above, MARKYVECH et al. in view of MIOTKE et al. do not teach or suggest what is recited in claim 16. Since claim 17 depends from claim 16 and further defines the invention, the proposed combination of references would not render obvious claim 17.

Claims 20-21 are rejected as unpatentable over MARKYVECH et al. in view of MIOTKE et al. and further in view of BENSON 3,589,345. This rejection is respectfully traversed.

BENSON is only cited for the teaching of a position sensor using a capacitive element or a position sensor using an inductive element. BENSON does not disclose or suggest what is recited in claim 16. As set forth, MARKYVECH et al. in view of MIOTKE et al. do not teach or suggest what is recited in claim 16. Since claims 20-21 depend from claim 16 and further define the invention, the proposed combination of references would not render obvious claims 20 and 21.

New claim 29 provides that a lever is connected to a second end of the sliding ferromagnetic nucleus and makes electrical contact with the sensing system. Support for new claim 29 can be found in Figure 4, for example. The features of new claim 29 are not disclosed by the cited references and thus claim 29 is also believed patentable over the cited prior art.

New claim 30 includes a substantially solid ferromagnetic nucleus axially slidable within a solenoid. Support for new claim 30 can also be seen in Figure 4.

As seen in Figure 3 of MARKYVECH et al., solenoid element 126 includes a portion that is within armature 140 such that armature 140 is not solid. Making the armature 140 of MARKYVECH et al. solid would change the flux path 128 of MARKYVECH et al. such that the armature would not operate in the manner

intended. Therefore, it would not be obvious to modify MARKYVECH et al. to have a substantially solid ferromagnetic nucleus axially slidable within a solenoid as recited in new claim 30.

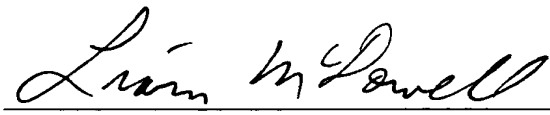
New claim 31 is similar to claim 29 and provides that a lever is connected to a second end of the sliding ferromagnetic nucleus and makes electrical contact with the sensing system. This feature is not taught by the proposed combination of references.

In view of the present amendment and the foregoing Remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



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